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THE VETERINARY JOURNAL

A Monthly Review of Veterinary Science.

Editor:
FREDERICK HOBDAY, C.M.G., F.R.C.V.S., F.R.S.E.,
HONORARY VETERINARY SURGEON TO HIS MAJESTY THE KING.
MAJOR IN THE ARMY VETERINARY CORPS.
HONORARY MEMBER OF AMERICAN VETERINARY MEDICAL ASSOCIATION.
CORRESPONDANT ÉTRANGER DE LA SOCIÉTÉ DE MÉDECINE VÉTÉRINAIRE DU BRABANT (BELGIUM)

Sub-Editor:
GLADSTONE MAYALL, M.R.C.V.S.

This issue of the "Veterinary Journal" is unavoidably late, as was the last issue, through the influenza epidemic having again depleted the Staff at our Printers', for which the Publishers tender their apologies.

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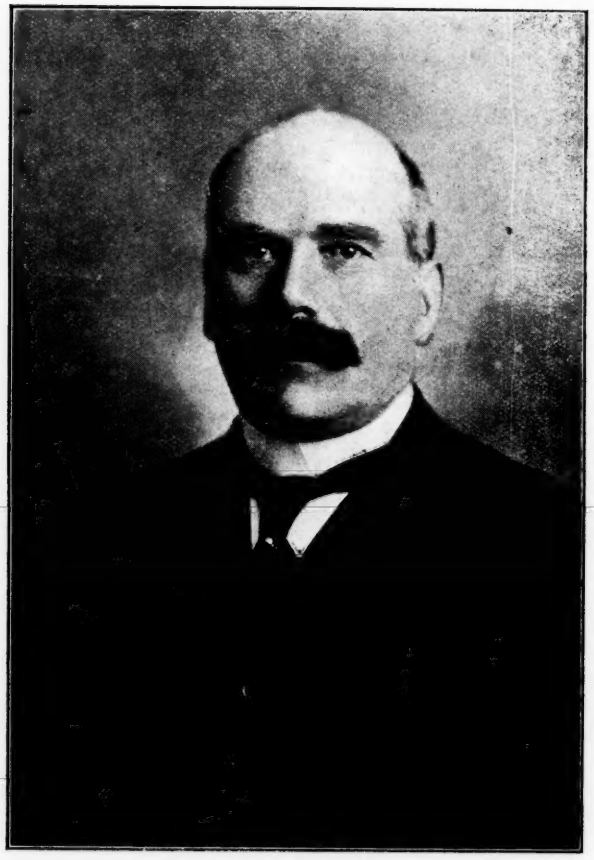

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Sub-Editor :

GLADSTONE MAYALL, M.R.C.V.S.

NOVEMBER, 1918.

Editorials.

SELF-HELP.

Most of us in boyhood's days read a book with the above title by a certain Dr. Smiles. Probably it was dry reading, because pattern conduct is often uninteresting, and virtue's sole reward is frequently an early grave. Nevertheless, the gist of the book is that all progress, material or moral, is due to effort, either collectively or individually, and the lesson is worth remembering to-day. If we as a profession want to rise and take our proper place in the spheres of work developed and developable we must be keen, active and sharp-sighted. By our status in the world and among the professions we must command the respect and regard of the people, and this status, respect and regard will only be won by effort. There will be more criticism and more discernment in regard to the science of work in the future, and we shall have to prove our worth as plainly as the tanks have done. Samuel Turner, in his valuable little book "From War to Work," writes: "I believe until the war came millions of our young men never really knew why they were alive." And again: "The effect on nations as on individuals of periods of stern stress is to stimulate their latent capacities and arouse them from mere idleness and self-indulgence, but above all to endow them with a definite aim, which they have perforce to recognise. And this is, on the whole, probably the greatest gift which can be given to men, rarely as it may be recognised." We must have a conscious aim to preserve and maintain the health of animals, to sharpen our weapons

in order to be in a position to do so, to look after our body politic and furnish it with the vitamines to enable it to put forth the maximum of effort and hold its head high up in the ranks of the professions. We want good men and true in our troop, men who will be jealous for the fair name of the profession, who will fight for it and uphold its interests in whichever of its fields they work. Individually we may do much, collectively we can advance our position and entrench ourselves. To our Council we must look for the broadening and safeguarding of many of our rights, privileges and responsibilities. We must not be narrow-minded, badly informed, and ignorant. We have been slackers in the past in many respects, and perhaps no greater stigma can rest on us at present than the state of our library and the little use it is to the profession as a whole. It needs funds in order to flourish. The army of quacks will be strongly reinforced in the few years following the termination of the war. Our Council must be able to take effective action against the poacher and interloper. We have often been ashamed of the stone-age ethics prevailing in our midst. Surely something might be done to raise the standard of the practice of this cult among us. We know that "we are as God made us and often a great deal worse," but dirty actions that will not bear the light of day ought not to be suffered among us, and deserve to be condignly punished.

In our eagerness for work we must not be always at it, else we shall develop into dull dogs. Slackening the bow keeps up its elasticity. "The key to success is to come to a task with a fresh mind." That was the meaning of the very immoral advice given by a don to a friend of mine on the day before an examination. "What would you advise me to read to-night?" asked my friend, anxious to make the most of the few remaining hours. "If I were you," said the don, "I shouldn't read anything—I should get drunk." He didn't mean that the business was so unimportant that it did not matter what he did. He meant that it was so important that he must forget all about it and come to it fresh from the outside. And he used the most violent illustration he could find to express his meaning. "I think all solemn men ought to take six pennyworth of Charlie Chaplin occasionally." There are well over 3,000 of us on the register. Up to the time of writing we have subscribed a little over £1,000 to the funds of the R.C.V.S. Is it worthy of us? Can we keep our proper place on this small sum? Come along, you *non*-subscribers, hurry up, and recollect that there are strenuous times in front of us, and that he who gives quickly gives twice. Surely our Peace-offering should greatly exceed £1,000 odd. G. M.

STOCK.

We make no apology for returning to the subject of our stock of animals. On its welfare and increase our security depends. There is reason to suppose that we shall need all hands on deck to multiply the numbers of our animals in the future. There will be a big demand for all stock in the years to come, and stock breeders, tenders, and keepers will desire increased scope for their work and efforts. In 1917 we had 1,324,000 horses, of which 930,000 were at work on farms in Great Britain. The number of cattle was about 7½ millions. We have 67,000 less milch cows than we had before the war. This, with our army of invalids and hoped for increase in children, is a sad fact. The pity of it is that some previous efficient research and foresight might have avoided it. There were 960,000 fewer sheep in 1917 than 1916. We have about 656,000 fewer pigs than before the war, and Ireland has about 400,000 less. There is plenty of leeway to make up, and let us hope that a look into the future will be taken, and the figures as regards Great Britain at any rate be quickly and materially increased. Contemporaneously with the increase of all stock, there needs to be a full and adequate supply of concentrated feeding stuffs secured. (See article on "Seaweed.") This means an awakening among our scientists and food producers, and the giving of full play and broad vision to experimenters, investigators and research workers. All this involves material help and support to men with brains and energy. G. M.

OUR LADIES' AUXILIARY RELIEF FUND COMMITTEE.

The following, which appeared in the journal of the American Veterinary Medical Association, will be of interest to our readers:—

"In a recent number of the *Veterinary Journal* (London) a very complimentary reference was made to our Ladies' Auxiliary Relief Fund Committee, but the editor expressed himself as not quite clear as to its function, compared to some of the aids the ladies were rendering our British confrères over there.

"As a matter of information to readers of the British journal, it may be stated that after the United States entered the world war, the American Veterinary Medical Association, at its 54th annual meeting, in Kansas City last year, took up a subscription on the spot, which reached a considerable sum, and appointed a relief committee to carry on this work. At the same time the ladies became interested, and in order to do what they could to assist, a ladies' auxiliary committee was appointed to solicit subscriptions from the wives, daughters and sisters of not only the male members of the association, but of those of the profession generally throughout the country. So that

the ladies' committee is, as the name implies, an aid, and a very important one, to the main committee in raising funds for the purpose for which it was organised.

"It may also be of interest to state that at the recent annual meeting of the A.V.M.A. at Philadelphia, the treasurer of the relief fund reported a total in hand of over $5,000, the fund now to be known as the Liautard Relief Fund, as a tribute to the memory of the late Dr. A. Liautard, who, we understand, originated the fund on the Continent; and also that the sum of $2,500 was voted by the association to be sent at once to the President, in France, of the Anglo-Franco-Belge Veterinary Relief Fund to help our suffering confrères in Europe, the amount to be presented by the ranking officer of the United States Army Veterinary Service in France at the time. We feel sure that the ladies of our auxiliary will sincerely appreciate the fact that the *Veterinary Journal* has been pleased to compliment them on their beneficent work."

Original Communications.

OBSTRUCTED BREATHING DUE TO A CYST.

By Lieut.-Colonel J. R. HODGKINS, D.S.O.,
Army Veterinary Corps.

History.—The subject of this note, a bay mare of the heavy draught type, aged eight years, was sent into hospital for a swelling in the throat.

On examination the swelling proved to be a painless, tumour-like growth, situated inferiorly to the larynx, and causing the trachea to bulge forward for about nine inches of its length.

Its actual contour was masked and impossible to manipulate, because the growth was immured anteriorly by the trachea, laterally by the mastoido-humeralis muscles, and posteriorly by the cervical vertebræ.

A report was called for as to whether the "growth" interfered with breathing on exercise. The reply to this was: "Does not make any noise on exercise."

A further report was asked for as to the animal's capabilities in draught. This trial proved that the animal was very distressed in draught, went down on her knees, and "made a noise." Diagnosis of any value was out of the question without operation, so this was decided upon.

Operation.—The animal, having been previously prepared in the usual manner, was thrown and secured as for the roaring operation. An incision was made through the skin, extending twelve inches

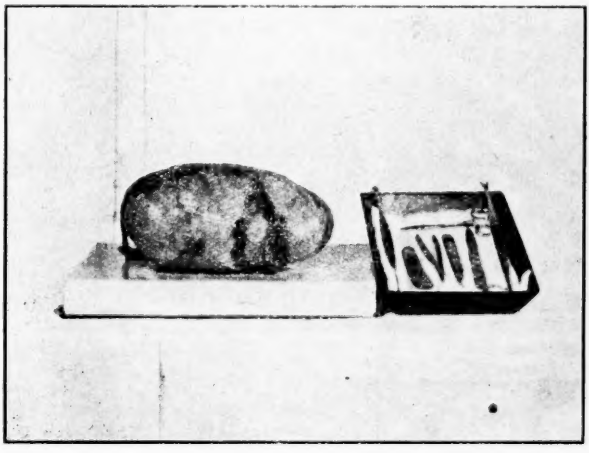
along the middle line over the trachea from the laryngeal region. Where this first incision terminated, a second was made at almost right angles to it on the right side of the neck in the direction of the crest.

The large area of skin lying between these two main lines was then laid back, beginning at the junction of the incisions.

This procedure revealed nothing to indicate the nature of the growth. The next step was to secure the integrity of the jugular vein, for it was realised that a serious wounding of this meant obscuration of the field.

Careful removal of the cervical panniculus from the mastoido-humeralis brought the vein into view, but still no information.

On again dissecting carefully, separating the muscles in relation



to the trachea, the parting of the sterno-maxillaris and the mastoido-humeralis allowed the operator to place his hand at last on the object sought, snugly tucked away behind the trachea. It was a fluctuating mass, so preparations were made for the evacuation of the contents should the emergency arise. Happily this was unnecessary, for the body lying loosely adherent was easily detached with the fingers, and brought out through the separated muscles.

Description of the Cyst.—It proved to be a cyst, somewhat ovoid in outline, weighing 6 lbs. 2 ounces, length $10\frac{3}{4}$ inches, breadth 7 inches.

The enclosing membrane was transparent, permitting the liquid content to be seen through the wall.

The accompanying photograph was taken and shows very well the shape, the instruments on the tray giving an excellent impression by comparison of the actual size of the cyst.

I am indebted for the picture to the officer commanding a veterinary hospital in the area.

The photograph having been secured, it was possible to gratify one's curiosity as to the contents of the cyst.

This proved to be a brownish liquid with an olive-green tint, recalling that of bile. There was no odour.

The amount of the liquid was 4½ pints. The internal wall of the cyst was partially covered with a fibrinous deposit, and pieces of organised material without any particular characteristics were floating in the liquid.

After-treatment.—There only remained to secure the surgical wounds after having washed with saline. Healing is proceeding rapidly, the only untoward happening to date being the dying of a small area of the skin forming the angle of the primary incisions.

TWO INTERESTING CASES OF "CHERRY'S OPERATION."

By MAJOR FREDERICK HOBDAY, F.R.C.V.S.,
Army Veterinary Corps.

CHERRY'S operation consists in the relieving of the tension upon sutures and in drawing together the edges of large wounds by making a parallel slit longitudinally on either side of the original wound. All three wounds then heal simultaneously, and as the two slits are always made in the direction of the hair, the resulting scars are almost (if not quite) invisible when healing has been completed.

It is called "Cherry's Operation" because it was first performed in veterinary surgery by Mr. Cherry, veterinary surgeon at that time to the Life Guards.

The following are two interesting illustrations of its value :—

CASE I.

The patient, a brown mare, 10 years old, was admitted to hospital suffering from indigestion and extreme debility as the result of eating sand and earth, and also from parasitic mange. The skin yielded to treatment in three months, and the animal put on a fair amount of condition, but at this period a large papilloma, six inches by two, made its appearance on the inside of the near thigh, and a second one of about the same size on the outside of the near forearm. These grew very rapidly and ulcerated, forming nasty sores. They were removed three times, either with the knife or the actual cautery, and cauterised on numerous occasions with cupri sulph., all with-

out more than just temporary effect. The one under the thigh was then erased completely under chloroform, a large area of skin around it being taken off at the same time. This finally healed. The one on the forearm was also completely excised, an elliptical incision being made well above and below the tumour, and two slits through the skin, one on either side of the operation wound (parallel to each other, and extending in length for fully eight inches), were made. These relieved the tension of the skin and enabled the edges of the ellipse to be drawn together. All three wounds healed by primary union within ten days, and there was no evidence of any attempt at recurrence when the animal was again seen several months later.

CASE II.

The patient, a horse, had had a nasty injury to the superior maxillary bone, and during the healing process the edges of the skin had curled inwards and adhered to the bone at the border of the wound, so that the wound never became covered over with skin and looked unsightly.

In order to obviate this, the edges of the wound were carefully dissected from the bone and freshened up, parallel incisions were made on either side of it, in order to relieve tension upon the sutures, which were then inserted to draw the edges together. The result was an excellent success, and each of the wounds healed rapidly. After six weeks it was difficult to find trace of the operation.

SEA-WEED.

BY G. MAYALL, M.R.C.V.S.,
Bolton.

POETS have sung and novelists and historians written about the harvest of the sea. The view of the harvest has as a rule been limited to fish, crabs, lobsters, molluscs and sponges. If the vision of agriculturists had been so curtailed we should indeed have been a race of meat-eaters, for corn, vegetables and roots would never have seen the light of day. Those who tilled the soil and won cereals, plant and vegetable produce from it would have laughed at those who only saw a source of food supply from the land in the creatures that lived on it. The wild fowl life of the sea and its rock and cliff bound shores have only just been skimmed as a possible source of food supply. The improvement of aquatic and marine birds, their care, collection and concentration has never been thoroughly undertaken to cause a steady flow of likely good material to the market, as in the case of the seal and whale industry. If this side of the life of the sea has only been indifferently explored and investigated, what may be said about its plant and vegetable life? Here a field for likely productive research

appears to have been almost wholly neglected. Those living near the sea can testify to the fondness of animals for marine plant life. No distinguished scientist, however, seems to have gone deeply into the matter or considered it worth much investigation. Years ago Whitla observed that pigs in the North of Ireland had been fatted on seaweed and sold profitably in the market. This fact contradicted the theory of those who considered that bladder sea-weed, wrack, tang or tangle was a good remedy for obesity. We ourselves have seen a horse eating bladder seaweed and enjoying it. He had done this for five years and grown fat on it. In a letter received from Lord Leverhulme, who has recently purchased the Island of Lewis, the following occurs :— "When I was in Lewis I was much interested to note that certain sea-weed was thrown upon the coast, there called 'tangle,' which is greedily devoured by the cattle, who will gorge themselves with it to repletion, in consequence of which they have to be driven off the shore or many would eat too much of this tangle." Here, then, is sufficient evidence that animals, in one respect, have more initiative than men in taking advantage of what the sea provides in abundance, and here, is enough testimony in favour of some scientific work being done with seaweed as a source of animal food supply. In the VETERINARY JOURNAL for February, 1918, at page 43, reference is made to measures the French Government is taking with regard to sea-weed, and again at pages 346 and 347, in the September issue, there is a further communication on "Sea-weed as Food for Horses." Hence we may arrive at the conclusion that horses, cattle, and pigs will eat seaweed readily, and all the proof goes to show that it is just the seaweed that grows so profusely and in such large quantities—in fact, the common sea-weed that cracks when you walk on it—that animals relish the most. Here we are nearly at the end of the greatest war in history, when animal food supply was never so scarce, and yet nobody has been investigating until quite recently a source of nourishment that not only grows in profusion round our shores, but is literally "chucked" at us daily, and if there is any answer to the question, "What are the wild waves saying ?" we think it has come at last, and that it must be— "For Heaven's sake use the seaweed that we are casting up for you twice daily to feed your animals and give them health and strength."

All evidence goes to show that there is something besides weather-glass and fertilising use in sea-weed, and when one considers what valuable chemicals and by-products are obtainable from it, the elementary way of dealing with it that we have hitherto adopted seems really astounding. We shall be glad to hear from any members of our profession or readers of this article who can throw any further light on seaweed-eating by animals. Mr. Wallis Hoare tells us that

in some parts of Ireland the working people eat a preparation of seaweed called "Dillisk," which is considered a delicacy.

The B. of A. and F. leaflet on "The use of Seaweed as Manure" describes two chief varieties of seaweed: (1) *Driftweed or tangle* with a stem and a broad flat frond or lamina, growing below low water mark; and (2) *Wrack* or *bladder wrack* found between tide marks which is the species of the plant we have seen eaten.

LYMPHANGITIS IN ELEPHANTS.

By M. C. GUPTA,

Veterinary Officer to Macgregor & Co., Toungoo, Burma.

THE term "Lymphangitis" is ordinarily used to designate a characteristic type of progressive inflammation, and sometimes suppuration, producing purulent ulcerous lesions on the limbs of elephants. There is an idea that in the general attack of lymphangitis the lymph glands are mainly involved. This is an erroneous conception.

Among ailments affecting the working elephants in the forests of Burma, lymphangitis occupies a very important place. All concerned about the elephants find themselves busy against these serious maladies, which at first furnish a comparatively strong contingent of non-effectives, then a number of chronic hospital cases. The length of treatment and repeated care and attendance which they exact put science and the medical personnel to the test.

The two chief types of lymphangitis actually known are (*a*) benign and (*b*) malignant.

(*a*) *Benign.*—In this form of lymphangitis the joints are not mainly affected, but the glands on the other parts of the body become at first firm and hard, later soft and elastic. Fusion of contiguous glands does not often occur and then tends to remain discrete, even after attaining a large size.

(*d*) *Malignant.*—The malignant form of lymphangitis is the most complicated one. The joints are mostly affected in this variety of the disease, and therefore we may give a synonymous meaning.

Definition.—A disease of the joints of doubtful etiology, but probably the result of infection, characterised by changes in the synovial membranes, cartilage and peri-articular structures, and in some cases by atrophic and hypertrophic changes in the bones. A tendency to a chronic course is the rule.

The disease is not intimately associated with rheumatism. By the studies of it we are gradually getting a more accurate knowledge of its anatomical and clinical forms. The synovial membranes and

the peri-articular tissues (rheumatoid arthritis) are sometimes less affected than the cartilage and bone (osteo arthritis).

ETIOLOGY.

(1) *Age.*—A majority of the cases are in young animals between the ages of thirty and fifty, and the cases are characterised by special cartilaginous and bony changes.

(2) *Sex.*—So far the cases are in equal proportion between males and females.

(3) *Predisposition.*—Unusual exposure to cold, wet and damp, errors in diet, especially at the beginning of the rains, when the animals gorge themselves on some palatable fodder—such as the new grass coming up at the beginning of the rains—and local injuries through fetters are all spoken of as possible exciting causes, but probably play but a small part. The disease occurs both in winter and summer, and in elephants that are well-conditioned and cared for, as well as among debilitated animals and those suffering from parasitic skin diseases and a condition of ill-health. In the majority of cases it is a result of some infectious process.

Morbid Anatomy (in both benign and malignant forms).—In *benign* form on section, the gland presents a grayish white semi-translucent appearance, broken by intersecting strands of fibrous tissue; there is no caseation or necrosis unless it develops into the malignant variety by a secondary infection. In this form of benign lymphangitis, microscopical examination from the exudation of pus in a few cases revealed not exactly the bacillus of Preisz-Nocard, which is an organism simulating the diphtheria bacillus, but a somewhat similar one.

In the *malignant* form the usual description is that of the late stages of disease when extensive damage has occurred, for there have been few opportunities to study the early changes. There are two main forms of change: (1) Lesions with atrophic changes in the cartilage and bones predominating, (2) with hypertrophy and overgrowth of bone (so-called osteo-arthritis). These two are seen most frequently in the joints of the extremities; whether they are distinct diseases or different manifestations of the same disease it is difficult to say. In many cases all forms of change are found, which speaks against the view that there are two distinct diseases. The changes in general are: (1) Effusion, which is not constant and shows no special features. (2) Changes in the synovial membrane. These are inflammatory. (3) The capsule and the surrounding tissues may be infiltrated and much swollen. The peri-articular tissues show infiltration, and the enlargement of the joint is more often due to swelling

about it than to bony changes. (4) Cartilage: this may show erosion, ulceration, atrophy or proliferation. The cartilage may disappear entirely, but the changes are often very irregular and uneven, and the cartilage may be replaced by fibrous tissue or by bone, the latter being most common at the edge of the cartilage. The cartilages may be soft and gradually absorbed or thinned. (5) Bone: this may show atrophy of varying grade. If the cartilage is completely

Illustration of Proliferations of both tibia and fibula with bony aukylosis of the knee-joint of Tusker "Pebume"; the animal had to be shot.

absorbed, the surface of the bone often becomes hard and eburnated. In the form spoken of as hypertrophic there is new bone formation, which is most common at the edge of the articular surfaces. In the knee-joint this may form an irregular ring of bone about the joint cavity. The commonest example of overgrowth bone is seen on the affected joint. There may be deposit of new bone in the ligaments—proliferation of bone usually occurs at the margins of the joints, in the form of irregular nodules—the osteophytes—which may lock

the joints. The formation of bone may also occur in ligaments. Bony ankylosis rarely occurs in the peripheral joints. There may be extensive secondary changes. Muscular atrophy is common and may appear with great rapidity. Contractures may follow and the joints become fixed in a flexed position. The occurrence of various changes in the joint is common, and bony change may occur with marked involvement of the peri-articular tissues.

Arthritis Deformans is a chronic infection. By studying the *malignant* cases this view has been gaining ground, although as yet positive bacteriological evidence is lacking. The infection may be with a specific organism, or perhaps with various ones. A few organisms have been obtained from the joints, but no facility was available for the injection of cultures into experimental animals. It, however, seems probable that this form of arthritis may be secondary to infection with various organisms. The infective theory of origin is gaining adherence. *Symptoms.*—In *benign* form the inflammation of the lymph vessels begins frequently on the limb, but is also commonly observed on the sides of the chest walls and abdomen, where it usually develops from a small wound or a slightly negligible fresh scar. Such wounds refuse to heal and sometimes gradually form ulcers with red, luxuriant granulation, or the resulting cicatri are transformed into a firm, painless node, which may first attain the size of a small ball, but gradually becomes as large as a cocoanut or sometimes bigger than this. The local process is followed by swelling of the regional lymph vessels, which form prominent, wavy and branching, painful strands, in the course of which develop firm tumours from the size of a fist to a large cocoanut. If treatment is taken in hand at once, these swellings sometimes become soft and pus forms, which requires opening, and evacuation of a large quantity of grayish white, semi-translucent matter escapes. In such cases the operating wounds heal up quickly under an antiseptic plan of treatment, whereas in the *malignant* variety the onset may be acute or gradual; with the chronic attack the duration is usually prolonged. The acute onset occurs more frequently in the form in which changes in the soft parts predominate.

Arthritis.—In the acute form the joints are swollen, tender and hot to the touch. There may be effusion in the affected joint. Pain is a marked feature, and is increased by movement, the patient usually taking the position in which he has the greatest ease. When a joint is once attacked, the process does not subside quickly, and when the arthritis lessens some change remains in the joint, which, however, may be very slight. The carpal elbow and knee-joints are often involved, with pain, effusion, limitation of motion, and later

villous arthritis or sub-luxation. Thickening of the capsule usually occurs early. With the hypertrophic form there is often bony proliferation.

General Features.—Temperature: No perceptible elevation of temperature in elephants has so far been observed. It is rather lower. The blood often shows a slight anæmia, which is not as

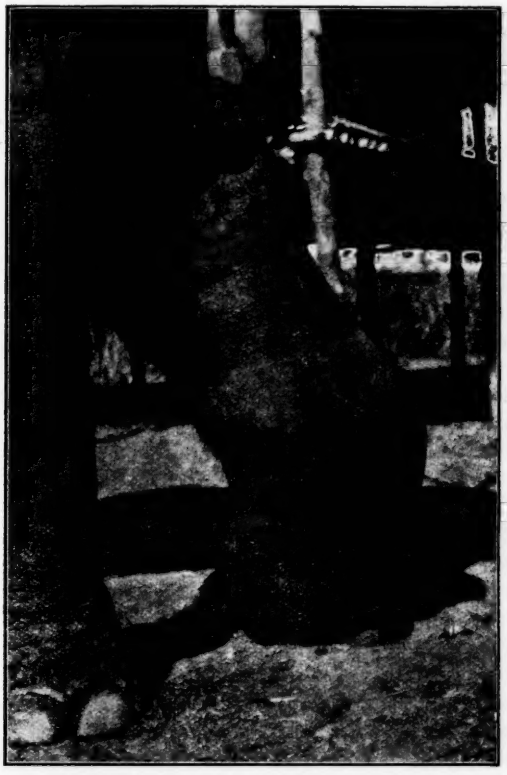


Illustration of Swelling of the Wrist-joint of Elephant, "Moloko." He is a patient in the hospital at present.

marked as might be expected from the appearance of the patients. The urine does not show any change of moment. Muscular atrophy is common, and sometimes advances very rapidly. In some cases the bony atrophy is very marked. Two illustrations herewith enclosed are interesting.

Course.—General Progressive Form: This occurs in two varieties,

acute and chronic. There is involvement of a joint or joints ; swelling, particularly of the synovial sheaths and bursae. The general nutrition usually remains good, though in malignant cases the animal may become emaciated. Some cases progress very rapidly ; they lose weight and strength, atrophy and arthritic deformity are marked ; and they suggest a progressive septic process without showing any exernal signs of suppuration in any of the affected joints.

The chronic form is the most common, although most of these have had at some time an acute attack, and especially at the onset. The first symptoms are pain on movement and swelling, which may be in the joint itself or peri-articular sheaths. In some cases the effusion is marked, in others slight. Pain is an extremely variable symptom. Some cases proceed to the most extreme deformity without severe pain ; in others the suffering is very great. Pain has an important influence in the production of deformity, as it hinders movement, and the joints are kept in the position of greatest ease.

Gradually the shape of the joint is greatly altered, partly by the thickening of the capsule and surrounding tissues, perhaps by the pressure of osteophytes, and often by the muscular contraction. Ultimately the joints become completely immobile, not by a true bony ankylosis, although it may be by the osteophytes which form around the articular surfaces like ringbone in the horse, but more often from adhesions, and peri-articular thickening. A majority of the cases finally reach a quiescent stage, in which they are free from pain, but suffer from crippling necessarily associated with the disease. A few cases also showed cardiac lesions.

Diagnosis.—The presence of swellings either at the joints or any other parts of the body, thickening in a joint, rapid muscular atrophy, pain on movement, temperature moderate—these are prominent signs and symptoms of the disease. The absence of marked response to salicylate medication speaks against rheumatism.

Prognosis.—In benign form the prognosis is generally favourable if the diagnosis is made at the early stage, whereas in the malignant cases the age, general circumstances and the extent of damage to the joints and the variety of change are all important. Rapid muscular atrophy is of great importance. Rapid advancement in the joint changes is serious.

Treatment.—Much depends on the proper management, and pessimistic attitude is not justified. Certain things are important ; early diagnosis, careful attention to the general condition, and every effort to limit the damage to the joints. The bowels should always be kept open, and for this the salines are useful.

Medicinal.—There is no drug which essentially influences the

disease. The salicylate may be an aid in relieving pain, but should not be given for long periods. Iron, arsenic and iodine are sometimes beneficial. Atoxyl sodium gave some very good results, but a permanent cure by any such drugs is the exception, not the rule.

Conclusion.

My main object in writing this Note is to direct the attention of the veterinary profession, both in India and elsewhere, to this disease, in order that it may be further investigated.

I have compiled a series of cases for the last five years. The cases of benign form of lymphangitis are too numerous to put them down in a tabular form. Fortunately this form of lymphangitis easily yields to treatment. So far only one case has a permanent disfigurement in her abdomen — a tumour as big as a cocoanut, at the centre of the abdomen.

Of malignant cases, for the last five years there have been 32 selected patients, out of which 15 died; that is to say, the casualty is about 43 per cent.

Lastly, the pathological condition and etiology of this disease that is met with fairly frequently amongst the working elephants in Burma are not identical with the case of lymphangitis in horses, as recently published in The Veterinary Journal. The bacillus isolated in the benign form of lymphangitis in the elephant is not similar to that of the bacillus of Preisz-Nocard Everything which is related here is based upon my own conviction and observation, and is therefore subject to correction.

References:

(1) *Veterinary Journal.*
(2) "Special Pathology," by Hutyra and Marek
(3) Osler's "Practice of Medicine"

INTERESTING CASES.

By G. MAYALL, M.R.C.V.S.,
Bolton.

IMPACTION OF THE COLON IN THE HORSE.

In the July number of the *Veterinary Journal*, at page 247, there is a short but very valuable Note by Mr. W. Lothian, M.R.C.V.S., of Duns, on the uses of sodium sulph. exsiccat. in the treatment of colic. He recommends it (as a substitute for linseed oil) in six-ounce doses dissolved in a quart of warm water.

On August 15th we were called to attend a valuable seven-year-old bay carthorse showing the following symptoms: Moving about uneasily in the stall, pawing with his forefeet, crouching, lying down

stretching out, getting up on his feet after a time, short intervals of quiet, and then repeating the performance. No dung passed for twelve hours. The usual wretched stuff which does duty as chop at the present day had been given as food. The impacted colon could be felt on palpitation per rectum. A stock colic drink of aloes and ammon. carb. had been given previous to our arrival. We gave the horse six ounces of sodium sulphate in a quart of warm water, and also an enema of warm water and soap. During the night he was restless, but in the morning showed some improvement, having passed some dung and remained quiet for longer intervals. We gave another rectal injection, and, as the pulse was good and the horse not in much pain, left him, telling the horse-keeper to report on his condition in the evening. The report was good, the horse being quieter and having passed three or four lots of dung. This horse now made a good recovery, and his appetite and condition have improved since the attack. A second case of the same nature in a black vanner terminated just as favourably under similar treatment. Here only four ounces of sodium sulph. exsiccat. were given in a whisky bottleful of warm water. Icteric membranes, pasty mouths, and fœtid breath soon disappear under the sodium sulphate treatment. Personally I wish to record my gratitude to Mr. Lothian, and hope others who read his Note and these lines will record their experiences.

BLOODY MILK.

THE rupture of blood vessels occurs inside the udder as the result of kicks, blows, and treads. The danger of internal injury would seem to be greater when the udder is distended with milk than otherwise. Probably this is the most frequent cause of blood in the milk in cows; but it is certain that a similar condition arises in heifers, due to the first functioning of the udder, and when bucket feeding the calves and hand milking is the practice. It may arise from rough milking; but sometimes we think there is transudation of blood through the blood vessel walls as a result of congestion of the udder.

The two following cases are interesting:—

Case I.—A cross-bred heifer calved three weeks with first calf. Calf taken away and bucket fed; heifer hand-milked. Blood was diffusely spread in the milk, and on standing the fluid in a glass a thick deep red layer was seen at the bottom. The heifer gave bloody milk from all the four quarters of the udder, rendering it quite unfit for human use. The farmer consulted me, and I prescribed drachm doses of liquor ferri perchlor in a pint of linseed tea twice daily, and the cow to be put on spare cooling diet. On the third day the character

of the milk had improved, but it was still mixed with a fair amount of blood. The liquor ferri perchlor was increased to two drachm doses in linseed tea, and on the seventh day blood ceased to appear in the milk, and the heifer has gone on quite all right since.

Case II.—A Welsh heifer dropped her first calf in April of this year. At the end of July blood appeared in the milk, and was chiefly observed in the last drawn milk. The blood appeared first in the fluid drawn from the front quarters of the udder, and then in that from the back quarters, and changed continually from one quarter to another. One drachm doses of liquor ferri perchlor were prescribed to be given twice daily in linseed tea. After seven days' treatment on these lines the milk became normal, and has remained so since. A curious feature in this case was that about three weeks after the commencement of treatment the milker felt something hard in one of the teats, and two clots of blood the size of saccharine tablets came through, but there was no subsequent hæmorrhage. In checking hæmorrhage externally by drugs we have found nothing to beat liquor ferri perchlor; in fact we consider it the only reliable styptic, and we have been let down by several others that are classed as such.

CLINICAL CASES.

By J. H. PARKER, M.R.C.V.S.,
Faringdon.

FATAL DUAL OPERATION.

The shire stallion Secundus Imin was bred by a tenant farmer, and sold as a two-year-old to a tenant farmer for 1,275 guineas—both records for tenant farmers—at the last London Shire Horse Show. Shortly after purchase it was found he made a noise, and he was sent to be sold for what he would make, last spring, at Peterborough. Whilst there, he developed influenza and prolapsus of the penis, and could not be exposed for sale. He was under the care of Mr. Lockwood for about three weeks, and was then sent home. I found him recovered from the influenza, but his penis was prolapsed and paralysed with a hard swelling about the middle third, which had evidently been scarified, as it was bare. We suspended the penis in a bandage and sheet, applied fomentations, lotions, massage, etc., with no result. Some one advised the owner to turn him out for a couple of months, with no result. I then received the order to operate on him on the kill-or-cure principle, as he was no use as he was, and there were a lot of lady farmers on the estate. On the 24th of June we put him down and chloroformed him deeply. I tied a wax end

ligature round the penis and inserted a catheter. The penis was severed by means of several sharp hot irons until we reached the catheter, the remaining part being severed with a scalpel. We castrated him at the same time with the actual cautery. After going about half way through the penis, the ligature slipped into the fissure and he bled freely for a bit. By means of several interrupted sutures we darned up the end of the penis and the bleeding stopped. We suspended the free end of the catheter under the abdomen with tapes. On June 24th the scrotum and sheath were undeniably swelling; on the 26th the swelling areas extending along the abdomen. He had a temperature of 106. Appetite gone. He died on the 27th. On cutting into the extirpated part of the penis, I found a cyst where the original swelling was, full of what looked like dried pulverised blood. I don't think the influenza was the cause of this, as the horse was in the habit of kicking at his penis when in a state of erection, and I think a blow caused the cyst. I wanted to keep it as a specimen, and after disinfecting it hung it up to dry, but the last I saw of it was disappearing down the neck of my foxhound puppy, disinfectant and all.

A PHARYNGEAL TUMOUR.

Subject.—A 2½ years old polled Angus bullock was making a snoring noise during respiration, with puffing of the cheeks at each expiration.

Diagnosis.—Pharyngeal abscess. Cast him and found swelling in pharynx about the size of a hen's egg. Pinched it off with my fingers, but little matter escaped. Breathing better for a week, when he snored as much as ever. Put him down again and found it had turned into a hard tumour, which I split in two with a hooked knife, but he did not improve and was sent to the butcher.

INTESTINAL CALCULI.

Subject.—A 10 years old light van mare, bought by a farmer at a London horse repository; previous history unknown. After being in the country about a month, had an attack of colic. I found her with an anxious look on her face. Pulse and temperature normal. Typanitic, and occasionally showing and persistently working the rectum. She had been served by the horse the day before, and they thought he had hurt her. She kept on like this for seven days and died. A *post-mortem* showed four large calculi in the floating colon. Dark smooth stones on section, and warted externally like an orange skin with mucus and dried ingesta.

FŒTAL DYTOKIA: A PUZZLING PRESENTATION.

Called at 5 a.m. on a cold frosty morning last February to attend a heifer for her first calf. Anticipating difficulty in starting the car, rode an ordinary bike four miles, and was nearly frozen. On arrival, found a small heifer presenting a calf's nose and what I thought were two fore feet. Room very limited and could not explore. Roped both forelegs at the pastern and tried to pull them forward without any result, although we used pulleys. After about an hour, I got the calf's head out and amputated it at the atloaxoid joint. I then found that we had been pulling at the left fore leg, and what I thought was the right foreleg was the foot of the off hind leg, and the right foreleg was doubled back from the shoulder and the right hind leg had taken its place. I have been at this game for 25 years and was never puzzled so much before. After getting the right foreleg forward, delivery was comparatively easy.

A VENEREAL WART.

About 12 months ago was asked to see a valuable two years old Friesian bull, which was supposed to have caught cold and would not serve his wives. Could find nothing wrong, but on showing him a cow in distress, could see he had a small wart on the tip of the penis. Tried to secure penis with a looped tape, but could not. Owner was anxious to use him, so we put him down and choloroformed him, but could not get the penis out of the sheath. Let him go for a week, then showed him another cow, and was then able to get looped tape on penis above the wart. Cast him and removed wart with force. In about a fortnight he bulled his cows again all right (and got them in calf). In about two months the wart came up again and the same process was repeated, with the same effect. After removing it three times with the wart forceps, I thought I would try the actual cautery the fourth time. We cast him by the Russian method (rope round body), and when I had got about half through the wart the bull struggled, and the man in charge of the rope let go. The bull jumped up and went full tilt round the yard; in doing so he put his foot in the looped tape and tore the wart off. There was a fair amount of bleeding, but we could do nothing more. I saw the bull yesterday, when he tried to bull a cow, and when he pulled the tape off, he pulled a bit of the end of the penis off containing the roots of the wart. Except being a bit shorter and having a peculiar look, I think it will be all right and that he will still be useful as a bull.

General Article.

THE MEAT-INSPECTION SERVICE OF THE UNITED STATES DEPARTMENT OF AGRICULTURE.*

By GEORGE DITEWIG,

Meat Inspection Division, Bureau of Animal Industry.

THE purpose of the meat-inspection service of the United States Department of Agriculture is to eliminate diseased or otherwise bad meat from the general food supply; to see that the preparations of the meats and products passed for human consumption are cleanly; to guard against the use of harmful dyes, preservatives, chemicals, or other deleterious ingredients; and to prevent the use of false or misleading names or statements on labels. In short, to protect the rights and health of the consumers of meat and meat food products to the fullest extent possible under the laws. The service is administered through the Bureau of Animal Industry of the department.

MEAT-INSPECTION LAWS AND REGULATIONS.

Federal inspection is maintained under the Meat Inspection Act of June 30, 1906, and supplementary legislation in the Tariff Act of October 3, 1913. Space will not permit giving an outline of the different provisions of the Act of June 30, 1906; however, it is essential to an understanding of the scope of the service that the reader know that the food animals to which the law refers are cattle, sheep, swine, and goats, and that the slaughtering, packing, rendering, and meat-preparing establishments to which it applies are those which sell or ship their products in whole or in part in inter-state or foreign commerce, and that it does not apply to those establishments the meats and products of which are neither sold nor shipped outside the confines of the State in which the plant is operated. Further, the Act grants a qualified exemption from inspection to retail dealers supplying their customers, and also provides a similar exemption for the meat from farm-slaughtered animals. The tariff legislation referred to provides inspection for imported meats and products.

The meat-inspection regulations of the department for governing the service are clear and comprehensive, and embody the recommendations of scientists and hygienists outside the department as well as the judgment and experience of administrative officials and workers in the service as to what constitutes an efficient system of inspection and how best to attain the objects of the law. Copies of the regulations may be had free upon application to the Bureau of Animal Industry.

* U.S.A. Department of Agriculture, Bulletin 714.

Sanitation.

The requirements as to sanitation in the establishments that operate under inspection occupy an important place in the meat-inspection regulations. Prior to 1906 the Secretary of Agriculture was without authority to fix and enforce such requirements, but when it was conferred by the Meat Inspection Act of that year the department proceeded to enforce sanitation in all establishments operated under Federal inspection. The first step taken was to require strict cleanliness as regards the rooms and equipment and in respect to the conduct of operations and the handling of products, and the second was to adopt rules governing plant and equipment construction.

The first part of the programme, that is, strict cleanliness, was soon attained in the plants of good construction, and in as full a measure as could rightly be expected in those of the type of construction common to that period. As regards the second, it was apparent from the beginning that conformity with a certain type of construction must be had if good sanitary conditions were to be readily and surely maintained throughout the plants. Accordingly it was endeavoured to attain this quality in all plants by leading to the use of non-absorbent materials instead of the absorbent ones which had been so freely used in previous construction; to replace rough and pervious surfaces with smooth and impervious ones; to supplant artificial light with abundant natural light; to replace odour-laden air with fresh air wherever possible; to eliminate incomplete and defective systems of drainage and plumbing and to install such as are modern and effective; to require that sanitary and adequate dressing-rooms, toilets, and lavatories be installed; to subject the water supply to the test of laboratory analysis to ensure its purity; and to require a separation of the rooms and equipment used for edible products from those used for inedible materials. These improvements indicate the rules adopted by the department to mark the reform in plant and equipment construction. It is believed that the progress made has been excellent.

The Ante-Mortem Inspection.

Under the Federal system not less than two examinations are made of the animals slaughtered in official establishments. The first is the ante-mortem inspection or examination of the live animal, the second the post-mortem inspection or examination of the carcass and the various organs and parts at the time of slaughter. The post-mortem is the more valuable of the two inspections, but both are necessary if it is to be determined with certainty in every instance that the flesh of the animal is sound, wholesome, and fit for human food.

The ante-mortem inspection is performed in the pens and alleys of the official establishments, except that at most of the large slaughtering centres it is found more convenient to conduct it in the public stockyards. The animals are carefully observed for evidence of disease or abnormal condition while at rest in the pens or as they move from the scales after weighing. If any of a lot show symptoms, then the entire lot is subjected to further and individual inspection. If the animals are swine and the symptoms indicate cholera, they are driven to a special pen for further examination, and in certain cases to ascertain their temperatures and to make a record of the same. Other diseases or conditions in which the question of temperature is important are Texas fever, anthrax, blackleg, pneumonia, septicemia, and severe injuries. When a high temperature exists, and there is doubt as to its cause, the affected an imalis marked and may be held for observation and retaking of temperature.

When its appearance is such as to lead the inspector to suspect that an animal is affected with a disease or condition that may cause its condemnation in whole or in part on the post-mortem inspection, it is marked for identification by means of a serially numbered metal tag bearing the phrase " U. S. Suspect " affixed to the ear. Such an animal is termed a " suspect." A record of the tag number, the inspector's diagnosis, and of the animal's temperature, if that was ascertained, is made and sent to the inspector who is to conduct the post-mortem inspection. This information is given due weight by him in determining the final disposition of the animal. Suspects are kept apart and slaughtered separately from those which were passed on the ante-mortem inspection.

Animals which show symptoms of rabies, tetanus, milk fever, or railroad sickness, and hogs which are plainly sick with hog cholera, are condemned on the ante-mortem inspection. Such animals are marked by means of a serially numbered " U. S. Condemned " metal tag affixed to the ear. Animals so tagged may not be taken into the slaughter room, but must be destroyed and disposed of as required for condemned carcasses to prevent their use for food. Animals which are found dead or in a dying condition on the premises of an establishment are condemned and disposed of in the same manner.

The Post-Mortem Inspection.

Each of the successive examinations, extending from the live animal to the finished meat food product, serves some particular purpose, and has a relative value in a complete system of meat inspection. Omission of certain of the other examinations would result in some, though not vital, impairment of the service as a whole, but

the post-mortem inspection is indispensable, because its chief purpose is to detect disease and to eliminate the danger that threatens the consumer on this account. Further proof of its importance lies in the fact that aside from certain exceptional conditions it is not possible for even an expert to recognise or prove the presence of disease or the effects of disease by an examination of the meat alone after it has been cut from the carcass, but he can do so through a proper examination of the whole carcass together with the organs. Before entering upon a description of the post-mortem inspection procedures the meaning of the word " disease " as it is used in meat inspection should receive some explanation.

MEANING OF " DISEASE " IN MEAT.

The meaning of the term " disease " as used in meat inspection does not differ materially from the meaning given it in medical literature, and never in meat inspection is the seriousness of disease underestimated. There is, however, much popular misconception in regard to the nature of the different conditions to which the term is applied in discussing meat inspection. The common or popular error on this point arises from the broad assumption that every condition to which the term disease is applied is noxious and harmful to such a degree as to make unsafe or unfit for food all the flesh of an animal in which any of these conditions is found. The facts of pathology plainly refute such assumption. By using the microscope and laboratory tests and by applying the term in its most technical meanings, a pathologist could demonstrate disease or evidence of disease in any and every food animal that might be submitted for examination. But no pathologist would hold such demonstration to be proof that the flesh of every such animal is unsafe or unfit for human food.

The error in the popular conception might be more clearly shown by the use of a homely illustration or two : The peach or the pear with a small unsound spot, strictly speaking, is an unsound fruit, but with the spot cut away it may certainly be a sound and delicious article of food. So also with a bunch of grapes, some of which may be in bad condition, while the others may be sweet and wholesome. Similarly, any one of certain diseases may exist in a circumscribed area or part of an animal. A clear illustration of this is the disease commonly called " lumpy jaw " of cattle. In many instances the tumour on the jaw attains a considerable size. Nevertheless, in very many such cases the disease is as distinctly localised as is the unsound spot on the pear, and aside from the affected part the flesh of the animal may be absolutely clean and wholesome. To carry the illustration further, in meat inspection tuberculosis is encountered far more frequently

than is any other disease, and great care is exercised to detect its presence in even the minutest degree. In a very considerable proportion of the cases found the lesions are confined to one or to a small number of the visceral lymphatic glands, or they may exist to a slight degree in an organ and in some of the lymph glands. An animal so affected is diseased, and yet in that form of the disease the lesions are so limited in number and so completely localised and hemmed in by encapsulating tissues, built up by the protective forces of the body, that the affected tissues are as distinct from the remainder of the animal economy as are the bad grapes from the good ones. With the bad ones removed the bunch becomes good food, and likewise the meat of this class of tuberculous animals must be regarded as sound and wholesome when the affected parts have been carefully removed.

The foregoing comparisons are used merely to illustrate the point that soundness and unsoundness may exist in the body at the same time in varying proportions, and that as a rule it is possible to separate and treat each portion according to its condition. In short, the point can be made clear by discarding the word " disease " for the moment and saying that the function of a scientific and national meat inpection is to recognise and reject the meat or meat food product which is unsafe or unfit for human food, to pass that which is wholesome and fit, and, when doubt exists as to which of these conditions obtains, to resolve, that doubt in favour of the consumer.

PROCEDURES.

The post-mortem inspection is made at the time of slaughter, and includes a careful examination of the carcass and all its parts. Where the number of animals dressed per hour does not exceed a certain general limit, one inspector, constantly present, performs all the inspections. Where the number of inspections per hour exceeds certain general limits, the inspectors are increased accordingly and the work so arranged and co-ordinated that each inspector gives entire attention to some particular part of it. Thus the work is in a sense specialised and the inspectors become specialists, with the result that a high individual and collective proficiency is attained and efficient inspection assured regardless of the rate of slaughter.

An important requirement in the conduct of this inspection is that the identity of the carcass and of each of its severed parts be carefully maintained until the inspection is completed, so that if there is disease in any one organ or part, all the other parts and the carcass may be brought together for additional and final examination. Facilities for maintaining such identity are provided in the slaughter departments, and every inspector is supplied with serially numbered " U. S. Retained " tags, which he affixes to the carcass and severed

parts, and by means of which he retains them for the additional inspection. The different steps of the post-mortem inspection are :— Head inspection, viscera inspection, carcass inspection, final inspection, disposition, and marking.

Head Inspection.

In cattle heads the different pairs of lymphatic glands are cut into and examined, particularly for tuberculosis. The tongue is examined and, if necessary, cut into. The presence in the flesh of cattle of a certain cyst capable of producing tapeworm in man can usually be determined by examining the inner and outer cheek muscles. Therefore these muscles of cattle are laid open by deep slicing cuts for the detection of this cyst. A careful survey is made of the head as a whole for actinomycosis, deformities, etc. In the heads of swine certain lymphatic glands, which are favourite seats of tuberculosis, are incised in every instance and examined for evidence of that disease.

Inspection of Viscera.

As the several organs are removed from the carcass they are placed before the inspector, on a table, in pans or other suitable metal receptacles for examination. Facilities for promptly cleansing such equipment in the event of contamination, through the contact of diseased viscera, are at hand. The various organs and parts are carefully viewed and certain of them cut into, while others are subjected to manual as well as visual examination. The entire procedure is methodical, and designed to disclose disease or harmful condition if any exists in the parts under examination.

Carcass Inspection.

This examination embraces a careful viewing of all surfaces and parts of the carcass, with particular attention given to the condition of the serous membranes of thoracic and abdominal cavities. Further, certain parts which more frequently than others are seats of disease, are subjected to a manual as well as a visual examination.

The head, viscera, and carcass examinations together constitute the regular post-mortem inspection. The animals found to be free from disease or any doubtful condition are marked "Inspected and Passed," while those in which any disease or doubtful condition is found are retained for the final inspection.

The Final Post-mortem Inspection.

The carcasses and parts retained on the regular inspection are sent to the final inspection room or place, where another inspector with special facilities at his command subjects them to a searching examination. This enables the inspectors engaged in the preliminary and regular inspections to continue their examinations of the animals which are before them without delay and without omission of any

kind. The establishments in which slaughtering is done are required to provide these rooms or places for the final inspection and to equip them with all the facilities necessary for a ready, cleanly, sanitary, and efficient performance of the work.

Since the animals held for the final inspection are tagged or retained for cause, only veterinary inspectors who have become skilled through training and experience in the work are detailed to make such examinations and to determine the final dispositions. As indicating the detail observed in the conduct of this inspection, it need only be mentioned that a record is made, on appropriate forms, of the results of the examination of every animal showing disease in any degree. In this record the animal is identified by a tag or stamp number; the diagnosis and the nature, location, and extent of the lesions are indicated; and the disposition of the carcasses and the name of the inspector are shown. The final inspection reports for the last fiscal year preceding this writing alone contain a record covering approximately 3,500,000 retained animals.

As soon as the several examinations have been made and the dispositions determined, there remain two important acts, the performance of which completes the post-mortem inspection. They are the marking of each carcass to show plainly to every beholder the disposition made of it and to see that those carcase and parts which are condemned are disposed of as required by the meat-inspection regulations to prevent the sale or use of the same as human food. Each of these procedures will be briefly described.

DISPOSITION OF CONDEMNED CARCASSES, MEATS, AND PRODUCTS.

The Federal meat-inspection regulations governing the disposal of condemned articles emphasise three important requirements, strict observance of which is imposed upon every bureau employee whose duties relate in any way to their enforcement:—First, that every condemned carcass, part of carcass, meat, or product be plainly marked to show that it is condemned, and that parts or products too small or which are of such nature that they cannot be so marked be placed in appropriately marked containers; second, that all condemned articles remain in the custody of an inspector from the time they are condemned until properly disposed of, and that if the articles are not disposed of on the day they are condemned they shall be locked in the "U. S. Condemned" rooms or compartments, the locks of which are selected and supplied by the department and the keys of which remain in the custody of the inspector; and third, that the required destruction or denaturing of the condemned articles shall be done by the establishment in the presence of an inspector, who must render a report covering the transaction. The Meat

Inspection Act specifically provides that the Secretary of Agriculture may withhold inspection from any establishment which fails to destroy for food purposes any condemned carcass or part thereof.

The customary method of treating condemned carcasses and parts is to convert them into grease and fertilisers by rendering them in a steam-pressure tank. The procedure as outlined and practised under the Federal meat-inspection regulations is substantially as follows :— The lower opening of the tank is securely sealed by an inspector with seals supplied by the department for the purpose ; then the condemned articles and a sufficient quantity of denaturing material of a kind approved by the department is placed in the tank in the inspector's presence, after which the upper opening is also sealed, and it remains the duty of the inspector to see that a sufficient force of steam is turned into the tank and maintained a sufficient time effectually to destroy the contents for food purposes. The department seals on the tank may be broken only by an inspector. A small number of the establishments at which Federal meat inspection is maintained do not have steam-pressure tanks in which condemned meats may be denatured in the manner described. At these such meats and products are denatured by the addition of crude carbolic acid or other prescribed denaturing agent, or are destroyed by incineration.

THE PRODUCTS INSPECTION.

Because meat or other edible portion of an animal which was entirely sound and wholesome at the time of slaughter may become unsound or contaminated through improper care or handling, and because healthful products may be made unwholesome through adulteration or the addition of deleterious ingredients, and for the purpose of protecting the purchaser against false or misleading labels, a proper measure of control of the various operations of processing, preparing, and labelling meats and products becomes necessary. Such control is one of the functions of the Federal inspection. In other words, under the Federal system the inspection extends from the live animal in the pen to the product in the labelled package. The bureau employees who conduct the products inspection are designated "lay inspectors" and are selected for their practical knowledge and experience in the handling and preparation of meats and meat food products ; also for their skill in testing and passing on these articles as to soundness and fitness for food.

All the meats and products in official establishments, notwithstanding that they are previously inspected and passed, are reinspected as often as may be necessary to ascertain whether they remain sound and wholesome. The lay inspectors exercise a supervision over all such operations as the processing, curing, packing, marking, labelling

and shipping of meats and products. The materials added to products are examined to see that regulations relating to prohibited ingredients are observed and that the requirements as to correctness of labelling are complied with. Samples of the different kinds of products are taken and referred to meat-inspection laboratories for chemical or other technical examination. It is also the duty of the lay inspectors to see that the requirements of the regulations in regard to the cleanly and sanitary handling of products and as to the sanitary conditions of the rooms and equipment are observed.

If, upon reinspection of an article, it is found to have become unfit for food from any cause, the original inspection mark or label thereon is removed or defaced and the article condemned.

THE INSPECTION MARKS, INSCRIPTIONS, ETC.

The mark of inspection is to identify the article and to show the condition of any particular carcass, meat, or product at the time the mark was applied. Under the Federal system, similar to that of the best European systems of meat inspection, three dispositions of a carcass are possible on the post-mortem inspection, depending on the conditions found. First, a carcass may be passed without restriction, meaning that when passed it was healthful, wholesome, and fit for human food. Such a carcass is marked "U.S. Inspected and Passed," or an authorized abbreviation thereof. The official number of the establishment always appears as a part of such mark, and serves to identify the carcass or part as having been inspected and passed at the establishment of that number. Second, a carcass or a part may be condemned, meaning that it is unsafe or unfit for human food, therefore must be destroyed or denatured to prevent its sale or use as human food. Such a carcass or part is marked "U. S. Condemned," and remains in the custody of an inspector until properly disposed of. Third, a carcass or a part thereof may be marked "Passed for Sterilization," meaning that it was passed on condition that it be rendered into lard or tallow, according to the species, or otherwise sterilized by methods approved by the Chief of the Bureau of Animal Industry. The explanation of this procedure is that the animal was affected with some condition or disease in such a degree that it could not be passed unconditionally; nevertheless, all objectionable conditions and all doubt as to its safety and fitness for human food can be removed by subjecting it to a sterilizing process. This process is to meat somewhat like pasteurization is to milk. There is, however, on the side of sterilization the advantage of greater certainty in the attainment of its object because of the higher temperatures employed under this process.

The flesh of a carcass passed for sterilization, whether it be in

the form of a cut, such as a ham, or a prepared product like canned meats, is marked "Prepared from Meat Passed for Sterilization." The container of such cut or product also bears this inscription.

Whenever it is possible to so apply it, the mark of inspection is stamped upon the carcass, cuts, and products themselves by means of a rubber or metal ink brand. In all cases the ink used is composed of approved ingredients. Occasionally burning brands are fused for imprinting the mark on cured meats, such as hams, bacon, and similar articles. When it is not possible to affix the mark to the article itself the required inscription is placed on the container of the article; in fact, all containers of inspected and passed meats and meat food products bear the inspection legend in the form of a printed label. The legend for all labels is "U. S. Inspected and Passed under Act of Congress, June 30, 1906," or "U. S. Inspected and Passed by Department of Agriculture," or authorized abbreviation. The last quoted is the preferred form, and after July 15, 1917, was the only one approved for labels printed after that date. Other marks of inspection, chiefly marks of convenience in the conduct of the inspection, are used, but those which have been described are the only ones in which the consumer is likely to feel concerned.

Consumers owe it to themselves to look for the mark of an efficient inspection, whether Federal, State, or municipal, on the meats, and meat food products they buy, or on the containers of the same, but in doing so they should consider that the mark cannot insure perishable foods against deterioration or other unfavourable change after they have been shipped from an establishment and beyond the jurisdiction of the inspection.

Honest Labels Required.

The legend "Inspected and Passed" means that the meat or product was sound, wholesome, and fit for human food when it was so marked; also that the packed article was correctly labelled. The Meat Inspection Act provides that when the inspected and passed meat or product is packed in any can, pot, tin, canvas, or other receptacle or covering, the establishment shall cause a label to be affixed to such container under the supervision of an inspector, stating that the contents thereof have been inspected and passed; the Act also provides that no such meat or product shall be sold or offered for sale under any false or deceptive name. The regulations based on this provision of the law define at length what may or may not appear upon any label which is to be used in connection with meats and products. However, they all centre to one purpose, namely, that the statements on the labels shall conform to the facts and correctly indicate the contents of the package. Copies of all labels intended

for use in official establishments must first be submitted to the Washington office of the bureau for examination and approval.

INSPECTION OF IMPORTED MEATS AND MEAT FOOD PRODUCTS.

The regulations governing the admission of meat and meat food products from foreign countries require that every importation shall be accompanied by a certificate signed by an official of the national government of the country of origin, stating that the animals from which the meat or meat food product was derived received an ante-mortem and a post-mortem veterinary inspection, and that at the time of slaughter the meat and products were sound, healthful, wholesome, and otherwise fit for human food. Further, that they had not been treated with and contain no ingredient prohibited by the regulation of the United States Department of Agriculture. Meat or meat food product not accompanied by the required certificate is refused entry, and that from a country which does not maintain a system of meat inspection satisfactory to the Secretary of Agriculture is also refused.

Every consignment of imported meat or product is checked with the foreign inspection certificate upon arrival, and is subjected to a thorough physical examination, and in most cases samples thereof undergo a laboratory examination. The meat or product is then admitted, refused entry, or condemned, according to the findings and the requirements of the regulations governing the inspection and handling of such imported articles.

The imported meat or product which is found to comply with the regulations and has been admitted into the United States is marked "U. S. Inspected and Passed," or an authorized abbreviation of the same, and with a letter or letters to denote the port at which inspection was made. When imported meats and products have been inspected and admitted the law directs that they shall be deemed and treated as domestic meats and products within the meaning of and subject to the provisions of the Meat Inspection Act.

PORK NOT MICROSCOPICALLY INSPECTED FOR TRICHINA.

Under the Federal meat inspection, pork is not microscopically inspected for trichina. There is no practicable method of microscopic inspection which is even approximately effective for the prevention of trichinosis in persons who eat uncooked pork. Careful investigations in one of the European countries in which a highly developed system is in force, have shown that nearly a third of all the cases of trichinosis, several thousand in number, which occurred during a period of 18 years were caused by pork which had been microscopically inspected and passed by the inspectors of that country as free from trichinæ. Evidence of this kind and various other considerations have led authorities to the conclusion that pork, even though

it has been microscopically inspected, is not a safe article of food unless it has been properly cooked or otherwise treated to destroy any trichinæ which may be present.

In countries in which there is an established and widely prevalent custom of eating uncooked pork, microscopic inspection is perhaps justified as a means of reducing somewhat the danger of trichinosis, though, on the other hand, it tends to encourage the unhygienic custom of eating uncooked pork by creating a false sense of security in the minds of the public. Under the conditions which exist in the United States, microscopic inspection, in view of its great expense and the imperfect results, does not appear warranted. On the contrary, it is reasonably certain that if a comparatively small part of the huge sum that would be required annually for microscopic inspection were judiciously employed in extending the education of the public on the subject of trichinosis, it would do more towards the prevention of the disease in this country than any system of microscopic inspection which could possibly be established.

In the United States most persons are careful to cook pork before eating it, and there is only a small fraction of the population, of foreign origin or under the influence of foreign food customs, who follow the dangerous practice of eating uncooked pork in one or more of its various forms of preparation, such as special kinds of sausage, hams, loin rolls, etc. Considerable quantities of products of the kind just mentioned are prepared in official establishments, and for the protection of the consumers, who may be either ignorant or careless of the dangers of raw pork, the Federal Government, as an alternative to the uncertain method of microscopic examination, requires that official establishments subject all articles consisting wholly or in part of pork, if of a kind customarily eaten without cooking, to certain prescribed processes which have been found to destroy trichinæ. It is important to note that these measures employed with reference to safeguarding pork products apply only to those which are of kinds customarily eaten without cooking, and do not apply to pork products, such as ordinary cured hams, bacon, and other products, which are customarily cooked before they are eaten, nor to fresh uncooked pork.

In view of the foregoing, it may be stated that the practice of thoroughly cooking pork offers the best safeguard against trichinosis and in general it is the only preventive method which can be absolutely depended upon by the consumer. Therefore, the certain way of avoiding trichinosis is to eat no pork unless it has been properly cooked. Whoever fails to observe this precaution runs the risk of acquiring sooner or later a most painful and distressing disease which frequently

terminates in death. Everyone should remember this simple rule of food hygiene: Cook pork well.

MEAT-INSPECTION LABORATORIES.

The regulations specify what may be added to meats for curing or other purposes. The use of substances which impair wholesomeness is prohibited, and only harmless artificial colouring matters may be used, and when used their presence must be declared on the product or the label. As a rule ordinary examination will not discover the presence of prohibited materials; therefore, to insure adequate examination for ingredients not permitted, also to determine soundness by chemical or other test, district laboratories fully equipped to make chemical and other technical examinations are maintained. Samples of meats and meat food products and of the materials used in their preparation are sent to these laboratories for examination. The samples are collected by the inspectors unannounced and at sufficiently frequent intervals to detect improper practices should any such be attempted.

In addition to the central and district chemical laboratories, the meat-inspection service has the co-operation and service of the several other scientific laboratories of the Bureau of Animal Industry. Frequently inspectors submit samples of diseased or abnormal tissues for diagnosis. Such samples are referred to the Pathological Division, in the laboratories of which they are tested and examined. The chief laboratory of this division is in the city of Washington, with branch laboratories in two other cities for the convenience of the more distant field stations. The numerous parasites and parasitic conditions with which meat inspection is concerned are studied by the Zoological Division, while questions relating to the biochemic changes that occur in animal tissues are referred to the laboratories of the Biochemic Division for attention.

THE NEED OF STATE AND MUNICIPAL INSPECTION TO SUPPLEMENT FEDERAL MEAT INSPECTION.

The Federal system of meat inspection has been extended to all parts of the field authorized for it by law. It is estimated that about 60 per cent. of the cattle, sheep, swine, and goats slaughtered in the United States and all imported meats are inspected under this system. This leaves approximately 40 per cent. of the domestic meat supply outside of Federal control. Much of the latter, it is known, receives no adequate inspection.

Federal meat-inspection statistics show that certain percentages of the different species of animals slaughtered are affected with some disease or condition in such degree as to require their condemnation in whole or in part. Some of the establishments at which Federal

inspection is maintained have endeavoured to avoid the loss incident to condemnation by exercising great care in the purchase of animals, accepting only such as appear to be sound and healthy. This has the effect of reducing the losses at such establishment, but it also tends to divert the sale of the animals of doubtful soundness to establishments that operate without inspection. With our knowledge of the frequency of disease in food animals, the question of what becomes of the meats and products derived from the diseased and unfit animals slaughtered in the uninspected houses assumes greater hygienic importance than is usually accorded it. Dr. Charles Wardell Stiles, after having studied a large number of town and country slaughterhouses, said: "A well-regulated system of slaughterhouses is as necessary to public health as is a well-regulated system of schools to public education."

Many of the slaughterhouses which operate under no system of inspection have features that are not only objectionable but dangerous to health. Their construction is such as to make them incapable of being kept sanitary. Their water supply and drainage systems are inadequate, and but little systematic attempt is made to keep them clean, and some are inexpressibly foul and filthy. Usually there is no protection of the meat against rats, flies, and other insects and vermin, and this condition is a dangerous source of contamination and infection. To remedy these conditions it has been proposed that municipalities provide central abattoirs at which all the slaughterers of a community may conduct their operations under sanitary conditions and an efficient system of inspection maintained. This proposal has very much to commend it; in fact, central municipal abattoirs have been established and operated with complete success in many of the cities of continental Europe, and several have been established in the United States.

Personnel of the Inspection Force.

The personnel of the meat-inspection service is divided into two general classes—professional and non-professional. The professional is composed of veterinary inspectors, laboratory inspectors, an architect, and a sanitary engineer. The non-professional consists of employees designated lay inspectors.

The veterinarians must be graduates of accredited veterinary colleges and pass the civil service examination of veterinary inspector in the service. At each meat-inspection station an inspector is selected to take charge of the work, and who reports directly to the Chief of the Bureau of Animal Industry. At stations where slaughtering is conducted only veterinary inspectors are placed in charge. The veterinary inspectors perform or supervise the regular ante-mortem and post-mortem inspections and perform all of the final post-mortem

examinations. The laboratory inspectors are chemists, and also must pass an examination in accordance with the civil service requirements. They make the laboratory tests and inspections.

The lay inspectors are designated lay inspector, grade 2, and lay inspector, grade 1; they also are required to pass the civil service examination. The lay inspectors, grade 2, are experienced and well informed in regard to packing-house operations; they supervise the curing, preparation, and marking of meats and products. They are trained in passing on meats and products as to soundness, and conduct the inspection and re-inspection of meats and products. The lay inspectors, grade 1, are required to have at least three years' experience in handling food-producing animals before taking the civil service examination. Their duties are to assist the veterinary inspectors in the ante-mortem and post-mortem inspections, and to perform other duties similar to those described for the lay inspectors, grade 2. After a certain period of service they are eligible for examination for promotion to the position of lay inspector, grade 2. It is the duty of every employee, whether veterinary inspector or lay inspector of either grade, to see that the sanitary regulations are observed in their respective departments.

Certain veterinary inspectors, selected for their experience and general qualifications, are known as travelling veterinary inspectors. They inspect the official stations and establishments in their respective territories and report to the chief of the bureau whether the regulations and instructions governing meat inspection are properly observed. Their visits are unannounced and their reports are valuable in their effort to secure a uniform inspection and the enforcement of the sanitary regulations.

The personnel at present consists in round numbers of 800 veterinary inspectors; 1,000 lay inspectors, grade 2; 700 lay inspectors, grade 1; and laboratory inspectors, administrative officers, and clerical forces to bring the total to about 2,650 persons.

STATISTICAL.

The following very brief statistical summary is by no means an adequate statement of all the work performed under the Federal meat-inspection system. It will suffice, however, to convey to the reader an idea of the magnitude of the service.

The number of establishments at which inspection is regularly maintained varies somewhat; however, for several years it has approximated 850, and includes practically every establishment of importance or large volume of operations in the United States. In the last five fiscal years preceding this writing the total of cattle, sheep, swine, and goats given the ante-mortem and post-mortem

inspections was in excess of an average of 58,500,000 per year. The average number of whole carcasses of such animals condemned during that period was more than 262,000 per year, while the number of parts of carcasses condemned per year was very much greater. The records of the inspection and re-inspections of meats and products subsequent to the slaughter inspection show totals running into billions of pounds annually, while the amount condemned on re-inspection on account of having become tainted, rancid, or otherwise unfit for human food, has approximated 18,000,000 pounds per year.

For the fiscal year preceding this writing, the sum appropriated by Congress for meat inspection was $3,375,000, within which sum the service was maintained. In other words, the cost was less than 6 cents for each of the 58,500,000 animals slaughtered. This charge covered the entire service from the first inspection of the live animal to the final examination of the meats in the finished products, when ready for delivery to dealers or consumers. In this connection it seems but right to add that there has been no sacrifice of efficiency and completeness to attain this low cost; on the contrary, it is the constant aim of the department to strengthen the service in these respects

Reviews.

ANNUAL REPORT OF THE CIVIL VETERINARY DEPARTMENT, BIHAR AND ORISSA, FOR THE YEAR 1917–1918.—Printed at Patna by Superintendent of Government Printing, Bihar and Orissa. Price 8d.

THIS report is sent to us by Mr. D. Quinlan, M.R.C.V.S., Superintendent of the Civil V.D. It comprises seven pages, with numerous statistical tables of disease. Foot-and-mouth disease was very prevalent, and owing to rains, floods, and bad roads the outbreaks were in many cases difficult to get to. Rinderpest occurred in all districts, and was difficult to deal with owing to local religious prejudice against any interference with cattle; 108,950 cattle were inoculated against different contagious diseases, rinderpest, hæmorrhagic septicæmia, anthrax, and black quarter being the diseases dealt with. Since September, 1917, all biological products from the Muktesar laboratories have been charged for—53 travelling veterinary assistants were in the employ of the department, and 69,122 cases were treated by them. There were 540 castrations conducted at the hospitals, and 30,820 animals treated. No research work was carried out. The cattle breeding farms did well. The low scale of pay and bad prospects have kept back the development of the Department.

Mr. E. Lister, secretary to the Government, comments favourably on Mr. Quinlan's work in a leaf at the end of the Report. He says :— "The conditions in which the Department is at present working are such as to fix very narrow limits to its efficiency, while they impose an undue burden on the Superintendent."

A new and desirable feature in this report is a map (in true war spirit) showing by various alignment the districts where the different cattle diseases prevailed. G. M.

COMMON DISEASES OF PIGS AND THEIR DIAGNOSIS, INCLUDING SWINE FEVER AND ITS TREATMENT WITH SERUM. By Ernest Peacey, F.R.C.V.S. Crown 8vo. Pp. viii—114. Price 3s. 6d. net. Publishers : Messrs. Bailliere, Tindall & Cox, 8, Henrietta Street, London, W.C. 2.

This is a useful book for veterinarians, dealing with the diagnosis of many of the contagious and infectious diseases of the pig. Swine fever, swine erysipelas, anthrax, pneumonia, and tuberculosis are well discussed. The origins of the last-named disease might very well have been summarised by the writer, and something said about its prevention. The serum treatment of swine fever is briefly referred to, but nothing is said about the technique of its application. As regards disinfection and the statement that only where fæces are fresh is there danger of infection, and also that where a stye is left empty for two or three weeks without being disinfected it is safe for fresh pigs, we express doubt as to its accuracy. It is the organism that causes swine fever that we have to deal with. The cleansability of the stye floor is a factor in effective disinfection, and we prefer to take the authoritative view that hog-cholera pens if left alone *may remain dangerous for at least a year*, and that the virus is not destroyed "even by the freezing weather in Iowa in the winter months." As far as the book goes, and it deals with some twenty-two diseases of swine, it may be read with interest and profit, but one feels sometimes that the author is writing with a good deal of restraint and does not let himself go. His views are those of a practical man of twenty years' experience, but some of the information in the book is quite too curtailed, and there are some rather bad omissions. The character of the fæces of a healthy pig as given by the author is not very informative. In the *Breeds* of pigs at page 9 surely the *Large White* ought to have a place. We keep hundreds of them in the North of England. The author does not appear to have seen medicine given to pigs as an electuary. As an old hand, I can recommend the method to him as being one of the best both for the pig and the attendant. At page 16 a caution is given about putting down briny food after giving sulphur

as medicine, because *poisonous reactions* may occur. What are the poisonous reactions? In "errors of diet" we think that potatoes given to pigs under three months of age is to be condemned, and there is often a tendency to give too large a quantity at all ages. We have known many deaths in young pigs from this error and some in adult pigs. We should like to know the names of the counties where "a castrator is required by the authorities to keep a record of his pig castrations." The author says it is the rule in *most* counties. "Septic poisoning" is mentioned as following castration; probably "septic infection" is meant, but no precautions to prevent it are given. The castration of pigs is far too happy-go-lucky an operation even at the present day, and we think there is negligence in dozens of cases; a bigger price ought to be charged for the job and more antiseptic precautions taken. We question whether partial paralysis is more common in sows than adult pigs, and many cases we have seen have been in hogs and probably due to rheumatism or rickets. There are many common diseases of swine totally omitted from the book, *e.g.*, rhinitis, rickets, eczema, diarrhœa of young pigs, urticaria, ringworm, etc. The author says he has "no knowledge of any publication dealing with the differential diagnosis of the diseases of swine," but we can easily name half a dozen, three of which are written in the English language. The book can be well recommended, and it ought to be a factor in enabling practitioners to get away from the belief prevalent some years ago, and even existent in many quarters to-day, namely, that a sick pig must necessarily be suffering from swine fever.

G. M.

Personal.

MR. JACK WILLETT, M.R.C.V.S.

THE honour which has recently been granted to Mr. Jack Willett, M.R.C.V.S., of being gazetted "An Honorary Veterinary Surgeon to His Majesty the King," is one which is well deserved, and the selection will be extremely popular in the profession, especially amongst the practitioners of London and the Home Counties, amongst whom his integrity is well known. It is an honour which has only been granted once before, and the fact of its being a "gazetted appointment," instead of a "tradesman's warrant," is an acknowledgment that our calling is a profession and not a trade. It is an honour conferred upon our profession in the same way as is similarly done to members of the medical profession, and it is necessary for the continued social advancement of our profession that future appointments shall be made and accepted on a similar

basis. Mr. Willett comes of veterinary stock, his father being a well-known practitioner at Staines, and his two brothers (one of whom is at present serving in the Army) are each very busy practitioners, and very popular. After graduating in Edinburgh he came to London, where he acted as assistant for some years before settling down "on his own" in his present locality. In London he has built up a large horse and dog practice, and amongst his neighbouring practitioners he is deservedly known as "my honourable opponent." In the social advancement of the profession he has always been a forward figure, having been President of the Central and Royal Counties Veterinary Societies and taking a prominent part in the National Veterinary Association and the Victoria Benevolent Fund. In conjunction with his late wife, his name was always prominent in charitable works connected with the profession, notably Mrs. Moore's A.V.C. Comforts Fund, and Victoria Benevolent Fund.

In wishing him long life to enjoy this new distinction, we are sure that we are echoing the voices of all his numerous acquaintances and friends in the profession.

MR. GEORGE GAIR, M.R.C.V.S., Cononbridge, Ross-shire, has been appointed to the position of bacteriologist to the Ross Memorial Hospital, Dingwall. Mr. Gair's appointment after three years' valuable work for the County is an honour to the veterinary profession.

CORRECTION.

In the September issue, in the article on "The Necessity for Abattoirs," by Thomas Parker, page 339, line 12, "Accession" should read "Accension."

NOTICES.

All communications should be addressed to 8, Henrietta Street, Covent Garden, London, W.C.2. Telephone : Gerrard 4646. Telegrams : "Baillière-Rand, London."

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